

REMARKS

Applicant hereby requests reconsideration of the Final rejection of all claims 34-41. All of applicants claims require a plasticizer-containing actuator diaphragm compressively retained between flanges to provide increased diaphragm retention as a result of increased bonding between the flanges and the diaphragm via a bond formed between the plasticizer in the diaphragm and the resin-containing coating composition on the flanges. This feature is neither shown nor suggested in the prior art references of record. The prior art provides no motivation to resin coat the flanges to provide the increased bonding claimed. The only suggestion for providing a resin between the diaphragm and a flange (Hanson et al. 4,022,114) is to dispose an epoxy adhesive composition on an undersurface of a cloth or fabric reinforcing layer 132 to adhere the cloth or fabric over the elastomeric diaphragm. Accordingly, there is no suggestion or motivation in any of the prior art of record to coat the flange that compressively retains and is in contact with a plasticizer-containing diaphragm between the flanges.

The cited prior art, and the fact that actuator diaphragms must be periodically replaced, regardless of the increased useful life of the claimed diaphragm, clearly teach away from the suggestion made in the final rejection "that conventional adhesives such as epoxy resin works well for adhering materials to diaphragms made from synthetic elastomers"... making it "obvious to use epoxy resin to adhere the diaphragm member to the flange structure in the device shown in Tuckey". Such a modification of the prior art is not a practical alternative and would render the flanges unsuitable for the intended purpose. The Hanson et al. '114 reference teaches applying an epoxy resin adhesive between the diaphragm surface and a cloth or fabric surface to adhere the cloth or fabric surface to the diaphragm. When the cloth-adhered diaphragm requires replacement, the entire diaphragm/cloth or fabric material is discarded and a new diaphragm is inserted. There is no suggestion in the Hanson et al. '114 patent or any other reference of record (or that could be found in the search of this application), for applying an adhesive resin to a flange surface for increased diaphragm-to-flange retention. Since flange surfaces, and the diaphragm surfaces that make contact therewith, should be planar to apply constant compression forces across the contacting diaphragm surface, application of an epoxy adhesive onto a flange in an attempt to bond the flange directly to the diaphragm surface, particularly with repeated diaphragm replacement,

would result in uneven, non-planar flange surfaces which would require repeated removal of cured epoxy resin from the flange surface when replacing the diaphragm. Thus, no reference has been found that suggests or motivates one skilled in the art to apply a resin-containing adhesive to a flange surface in order to achieve increased diaphragm-to-flange adherence.

Applicant has found that the increased bond between the diaphragm-contained plasticizer and a resin-coated (*e.g.*, painted) flange surface results in increased diaphragm-to-flange adherence, which does not result in a non-planar flange surface upon diaphragm replacement, making the claimed invention practical and non-obvious based on the prior art of record.

It is submitted that the prior art of record teaches away from applicant's claimed invention since diaphragm-to-flange retention has been a required property in actuator diaphragm use since the inception of actuator diaphragms. Yet, since the inception of actuator diaphragms, those skilled in the art have not applied an adhesive directly between an actuator diaphragm and a flange used to compressively retain said diaphragm with the flange-coated adhesive disposed against the surface of the diaphragm, for the reasons set forth above.

As stated above, a proposed modification of adding an epoxy resin adhesive directly to the flange surface would render that flange surface unsatisfactory for its intended purpose and, therefore, there is no suggestion or motivation to make the proposed modification. In *re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). Further, there is no suggestion in the prior art that any bond might result between a diaphragm-contained plasticizer and a resin on a resin-coated flange, as discovered herein. It is submitted that any suggestion that the diaphragm composition of the Tuckey '529 patent should be modified by the composition of Yamagishi et al. '876 in order to provide a composition capable of plasticizer-to-resin bonding; and then to modify the location of the epoxy resin adhesive used by Hanson et al. '114 to contact the flange surface instead of on an undersurface of a cloth or fabric material (not in contact with the flange) in order to achieve an inherent bond (the discovery made by applicant herein), is clearly unmotivated by the prior art of record, particularly where applicants claimed mechanism is not taught in any prior art of record.

It is submitted that all claims are now of proper form and scope for allowance.
Early and favorable consideration is respectfully requested.

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Respectfully submitted,

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